

Shenandoah, Schuylkill county: the rain storm throughout this section on the 4th was the most severe for a number of years; no less than twelve collieries in Mason Valley were flooded; railroad trains were delayed and great damage done. Three washouts occurred between Delano and Ashland on the Lehigh Valley Railway.

Lock Haven, Clinton county: the flood on the Susquehanna River reached its height on the 5th and submerged three-fourths of the city; no lives were lost, but the damage was very great.

Lock Haven, Clinton county: the greater part of the city was flooded on the 5th, the water in the Susquehanna River being within two feet as high as it was in the great flood of 1865; large quantities of saw-logs broke loose and were lost.

Williamsport, Lycoming county; great damage was done by the high water in the Susquehanna River on the 5th; the track of the Philadelphia and Reading Railroad was covered, preventing the running of trains. All streams were high, and heavy land slides have occurred near Montgomery and other points east of this city; bridges were washed away, and travel on public roads wholly interrupted; over a million feet of valuable lumber was washed away.

Easton, Northampton county; on the afternoon of the 5th the Lehigh River was sixteen feet high and in the Delaware River eighteen feet; several mills and factories were inundated, causing the suspension of business; railroad trains were delayed by washouts and land slides.

Mauch Chunk, Carbon county; the Lehigh River was higher on the 5th than at any time since the disastrous freshet of 1862; cellars were flooded and great damage done.

#### HIGH TIDES.

Salisbury, Wicomico county, Maryland: an unusually high tide occurred on the 8th; the water rose three feet above high-water mark, submerging portions of the city and sweeping away large quantities of lumber.

Westover, Somerset county, Maryland: a very high tide occurred on the 9th, which caused a heavy destruction of property in the lower part of Fairmount district; the water covered a number of farms to the depth of several feet.

New Bedford, Bristol county, Massachusetts: the heaviest tide for several years occurred on the 9th; wharves were overflowed, and Fish Island was completely covered.

High tides also occurred, as follows:

Eastport, Maine, 21st, 22d, 23d.

Newport, Rhode Island, 9th.

New London, Connecticut, 9th.

Sandy Hook, New Jersey, 9th.

Cedar Keys, Florida, 8th.

San Francisco, California, 20th.

Bird's Nest, Virginia, 9th.

#### LOW TIDES.

Indianola, Texas, 8th to 11th.

#### VERIFICATIONS.

##### INDICATIONS.

The detailed comparison of the tri-daily indications for districts east of the Rocky Mountains for January 1886, with the telegraphic reports for the succeeding thirty-two hours, shows the general average percentage of verifications to be 80.78 per cent. The percentages for the four elements are: Weather, 82.81; direction of the wind, 83.41; temperature, 77.41; barometer, 78.14 per cent. By geographical districts, they are: For New England, 85.95; middle Atlantic states, 86.80; south Atlantic states, 84.37; eastern Gulf states, 86.44; western Gulf states, 80.91; lower lake region, 78.84; upper lake region, 79.41; Ohio Valley and Tennessee, 81.04; upper Mississippi valley, 72.41; Missouri Valley, 71.11. There were eleven omissions to predict, out of 3,252, or 0.31 per cent. Of the 3,241 predictions that have been made, one hundred and twenty-eight, or 3.95 per cent., are considered to have entirely failed; one hundred and sixty-one,

or 4.97 per cent., were one-fourth verified; four hundred and fifty-seven, or 14.10 per cent., were one-half verified; five hundred and eighty-three, or 17.99 per cent., were three-fourths verified; 1,912, or 58.99 per cent., were fully verified, so far as can be ascertained from the tri-daily reports.

The percentages of verifications of special predictions for certain localities are, as follows:

Baltimore, Maryland (twenty-seven days), 80.09; Washington City (twenty-seven days), 77.32; Erie, Pennsylvania, 75.81; Boston, Massachusetts, and New Haven, Connecticut, 86.47; Portland, Maine (thirty days), 77.50; Albany, New York, 74.60; Pittsburg, Pennsylvania, 80.24; Cincinnati, Ohio, 76.61; Louisville, Kentucky, 76.61; Sandusky, Ohio (thirty days), 75.83; Cairo, Illinois, 76.23; Saint Louis, Missouri, 69.35; Kansas, Indian Territory, and western Missouri, 66.94; Memphis, Tennessee, 73.39; Shreveport, Louisiana, 75.81; Iowa, 67.74; Tennessee, 79.10; northern Florida, 77.82; Lynchburg, Virginia (twenty-seven days), 65.74; Columbus, Ohio (twenty-six days), 70.19; Cleveland, Ohio (twenty-nine days), 78.45; Indianapolis, Indiana, 75.40; Oswego, New York, 76.61; Rochester, New York, 77.42; Buffalo, New York, 76.61; Milwaukee, Wisconsin, 76.61; Chicago, Illinois, 72.58; Detroit, Michigan, 70.96; Toledo, Ohio, 70.96; Omaha, Nebraska (twenty-six days), 74.04; Arkansas (twenty-six days), 87.99; Georgia (twenty-four days), 88.02; Saint Paul, Minnesota (twenty-three days), 65.22; Augusta, Atlanta, and Savannah, Georgia (three days), 70.83; New York City, 88.71; Philadelphia, Pennsylvania, 84.68; Colorado (thirty days), 77.08.

#### CAUTIONARY SIGNALS.

During January, 1886, one hundred and thirty-six cautionary signals were ordered. Of these, one hundred and fourteen, or 83.82 per cent., were justified by winds of twenty-five miles or more per hour at or within one hundred miles of the station. Fifty-four cautionary off-shore signals were ordered, of which number, forty-one, or 75.93 per cent., were fully justified, both as to direction and velocity; fifty-three, or 98.15 per cent., were justified as to direction; and forty-one, or 75.93 per cent., were justified as to velocity. One hundred and ninety signals of all kinds were ordered, one hundred and fifty-five, or 81.58 per cent., being fully justified. These do not include signals ordered at display stations where the velocity of the wind is only estimated. Of the above cautionary off-shore signals, forty-eight were changed from cautionary. Five signals were ordered late. In twenty-five cases, winds of twenty-five miles or more per hour were reported for which no signals were ordered.

#### COLD-WAVE SIGNALS.

During January, 1886, three hundred and twenty-six cold-wave signals were ordered, of which number, two hundred and sixty-eight, or 82.21 per cent., were justified.

#### RAILWAY WEATHER SIGNALS.

Prof. P. H. Mell, jr., director of the "Alabama Weather Service," in the report for January, 1886, states:

The verifications of predictions for the whole area was 94 per cent. for temperature, and 94 per cent. for weather.

The following roads comprise this system: Western of Alabama; South and North; Montgomery and Mobile; Mobile and Girard; Georgia Pacific; East Tennessee, Virginia and Georgia system in Alabama; Memphis and Charleston; Columbus Western; Alabama Great Southern; Atlanta and West Point of Georgia; Northeastern of Georgia; Atlanta and Charlotte Air Line; Western and Atlantic; Georgia; East Tennessee, Virginia and Georgia system in Georgia; and Montgomery and Eufaula.

#### ATMOSPHERIC ELECTRICITY.

##### AURORAS.

Auroral displays occurred during January, as follows:

Saint Vincent, Minnesota: an aurora was observed at 9.20 p. m. of the 1st, extending from 125° to 200° azimuth, consisting of an irregular whitish light of about 15° altitude from which occasional streamers shot up to an altitude of 30°; the display lasted until after midnight.